

The primary mirror segments on the James Webb Space Telescope get the most press because, if nothing else, their sheer size. But there are other mirrors just as critical to making the telescope work. To tell us something out about something called the tertiary mirror is Koby Smith here at Ball Aerospace in Boulder, Colorado. Thanks for having us over.... So Koby, tell us what's a tertiary mirror. How does it into the whole operation of the telescope?

Sure. So you mentioned the primary mirror segments as compromised of a primary mirror, which is, of course, built up of the 18 primary mirror segments which is shown here. So you imagine your whole primary mirror as 18 of these segments all the way around in space. This Aft Optics Subsystem sits in the middle of all of those mirrors. Alright. The light from, say, the galaxy or star you're interested in, reflects off the primary mirror, off the secondary mirror, then into the aperture here of the Aft Optics Subsystem, then reflects off the tertiary mirror, then again off the fine steering mirror, and back into the science instruments in the back of the telescope.

So the tertiary mirror is your third stop in this optical path.

Exactly.

So do you have a tertiary mirror here?

Actually we just received one from coating. We can go down on the floor. We'll unpack it and take it into optical test.

In the cleanroom:

So this afternoon, we're going to unpack the coated, final polished tertiary mirror from the shipping container using the flight transport cart on the soft jaws. Place it on the optical test stand here and wheel that into the tent for the optical test table.

Where are we now?

We're in the optical test tent for both the secondary mirror and the tertiary mirror. It's used and reconfigured for testing both those optics. Over here is what's called an interferometer and that's used to measure the surface quality of these optics. It sends out a wavefront of light and compares it to a known reference. And any deviations on that surface will appear as fringes on our camera screen.

Thanks Kobe for giving us a sense of the tertiary mirror does and the kind of testing it's going through.

Thank you.

So after this tertiary mirror goes through this optical testing, it'll go through some vibration and thermal testing before being integrated with the rest of the telescope. Thanks for joining us for another edition of Behind the Webb.